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CNO/N772 ltr N772A/6U875630 20 Jan 2006 & ONR ltr 31 Jan 2006

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⑨ FINAL REPORT 1 Jul 73 - 31 Oct 77.

CONTRACT NO. N00014-74-C-0049

⑪ 31 DECEMBER 1977

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Prepared for:

(LRAPP)

① Long Range Acoustic Propagation Project  
Department of the Navy  
Naval Ocean Research and Development Activity  
NSTL Station, MS 39529

*Doc 520*

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## 1.0 INTRODUCTION

Xonics provided continuous technical services to Director, Long Range Acoustic Propagation Project (LRAPP) from 1 July 1973 through 31 October 1977 under Contract N00014-74-C-0049 and Modifications P00001 through P00011. The work was conducted by Xonics Oceans Systems Division under the direction of Mr. Sidney Kulek, Executive Vice President and General Manager of Xonics. Section 2.0 of this report provides a description of the work performed under the basic contract and each modification thereof and Section 3.0 provides a financial summary of the contract modifications.

## 2.0 DESCRIPTION OF TECHNICAL EFFORT

### A. Basic Contract

Xonics provided technical support services in support of a major LRAPP acoustic exercise during the period 1 July 1973 through 15 October 1973 under Contract N00014-74-C-0049. During this period, Xonics efforts were directed at the following tasks:

Task I - Technical support in planning a major LRAPP acoustic exercise that included the following:

- Data and data reduction requirements;
- Data selection and validation;
- Data reduction and analysis responsibilities;
- Estimated resources required to perform the data reduction and analysis task on an organizational and task basis;
- Defined milestones, a time schedule to accomplish the milestones, and a reporting schedule;
- Prepared Data Reduction and Analysis Plan; and
- Evaluated techniques for processing directionality data and coherence.

Task II - Technical support pertaining to operational readiness of equipment and facilities essential for a major LRAPP acoustic exercise that included work in the following two designated areas:

1. Verification of operational readiness of exercise elements, such as, but not limited to:

- Ship and ship systems;
- Measurement equipment;
- Test documentation relative to equipment operating procedures;
- Ship and scientific crew; and
- Expendables

2. Coordination of milestones with each Principal Investigator involved in various aspects of the program to meet schedule demands essential for exercise success. This coordination was completed by a series of actions as follows:

- Requested exercise preparation status reports and preparation plans (events and schedule) in PERT format from Principal Investigators;
- Assessed current state of readiness for equipment from Principal Investigator status reports;
- Evaluated exercise preparation plans for realizability and level of detail and modified where necessary after approval from the Technical Director;
- Periodically reviewed progress with each Principal Investigator for comparison with preparation plan schedule; notified Technical Director of all schedule slips and recommended solutions;
- Assisted in the revision of the preparation plans with the Principal Investigators; and
- Spotchecked status of preparation by on-site inspections of critical equipment, examination of test and calibration data, witnessing of system demonstrations, and review of test log forms and data sheets.

All appropriate activity reports and summaries were prepared and submitted to the Scientific Officer.

B. Modification P00001

Under this modification, Xonics continued to provide technical services to Director, LRAPP from 21 August 1973 through 31 December 1973 relative to data reduction and analysis for a major LRAPP acoustic exercise. The effort was conducted in two phases with defined tasks as follows:

Phase I

- Developed processing specification for data reduction and analysis compatible with the sensors of a parallel exercise;
- Identified specific data to be analyzed relative to type and quantity;
- Prepared a Data Reduction and Analysis Management Plan citing responsibilities, tasks, and schedules;
- Revised, as necessary, the 20 August 1973 revision of the Data Reduction and Analysis Plan; and
- Revised, published, and distributed the Data Reduction and Analysis Plan.

Phase II

- Coordinated the reduction and analysis of all required exercise data, including acting as technical liaison; and
- Disseminated exercise data and results.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

C. Modification P00002

Under this modification, Xonics continued to provide technical services to Director, LRAPP from 12 November 1973 through 30 June 1974 and conducted the following additional tasks:

- Prepared a review of the draft SQUARE DEAL Data Analysis Plan, Volume I;
- Prepared the final draft SQUARE DEAL Data Analysis Plan, Volumes I and II; and
- Revised and published CHURCH ANCHOR Data Analysis Plan.

All appropriate activity reports and summaries for the contract modifications were prepared and submitted to the Scientific Officer.

D. Modification P00003

Under this modification, Xonics continued to provide technical services to Director, LRAPP from 1 May 1974 through 31 July 1974 and conducted the following additional tasks:

- Revised Volume I of SQUARE DEAL Data Analysis Plan as dictated by changing priorities. Special attention was directed toward individual task assignments; and
- Rewrote and edited inputs to Volume II of the Data Analysis Plan; original artwork and tables in the publication were completed. After draft review and approval, the publication was printed and distributed as a Maury Center Report.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

E. Modification P00004

Under this modification, Xonics continued to provide technical services to Director, LRAPP from 1 July 1974 through 30 June 1975 and conducted the following additional tasks:

- Served as Analysis Director for the SQUARE DEAL Exercise; and
- Specified contents and structure of the SQUARE DEAL Environmental Acoustics Summary Report. Prepared this report under direction of Director, LRAPP and with the assistance of the Exercise Principal Investigators.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

F. Modification P00005

This modification corrected an administrative error in Modification P00004 but did not effect the technical effort.

G. Modification P00006

This modification changed the accounting data requirements but did not effect the technical effort.

H. Modification P00007

This modification expanded the task initiated in Modification P00004. Xonics prepared a draft of the SQUARE DEAL Environmental Acoustics Summary that incorporated the Executive Summary and all additional analyses and results suggested by the Editorial Review Panel. This effort was accomplished during the period 1 July 1975 through 31 December 1975.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

I. Modification P00009

This modification changed some of the general provisions of the contract but did not effect the technical effort.

J. Modification P00010

This modification extended the period of performance through 31 August 1976 and provided for additional technical support for modification of the SQUARE DEAL Environmental Acoustics Summary as directed by Director, LRAPP.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

K. Modification P00011

This modification extended the period of performance through 31 October 1977 in order to revise the SQUARE DEAL Environmental Acoustics Summary as directed by Director, LRAPP.

All appropriate activity reports and summaries for this contract modification were prepared and submitted to the Scientific Officer.

3.0 FINANCIAL SUMMARY

Table I presents a financial summary of Contract N00014-74-C-0049 by task and modification number. Monthly financial estimates have been submitted to the Scientific Officer as required.



Table 1. Contract No. N00014-74-C-0049 Financial Summary

<u>Modification Number</u>	<u>Task Description</u>	<u>Amount Funded (\$K)</u>
Basic	CHURCH ANCHOR Data Reduction Analysis Specification and Planning	\$ 65.4
	CHURCH ANCHOR Operational Readiness Support	23.9
P00001	CHURCH ANCHOR Data Reduction and Analysis Plan Revision	34.8
	Coordination of CHURCH ANCHOR Data Reduction and Analysis and Dissemination of Results	25.6
P00002	Preparation of Draft, SQUARE DEAL Data Analysis Plan, Volume I	30.3
	Preparation of Final Draft, SQUARE DEAL Data Analysis Plan, Volumes I and II	20.8
P00003	Revision and Final Publication of CHURCH ANCHOR Data Analysis Plan	39.9
	Revision and Publication of SQUARE DEAL Data Analysis Plan, Volumes I and II	21.4
P00004	SQUARE DEAL Analysis Director	52.5
	Specification and Preparation of SQUARE DEAL Environmental Acoustics Summary	45.2
P00005	Administrative	-
P00006	Administrative	-
P00007	Expansion and Revision of SQUARE DEAL Environmental Acoustics Summary	25.8
P00008	Administrative	-
P00009	Administrative	-
P00010	Final Revision of SQUARE DEAL Environmental Acoustics Summary	10.6
P00011	Administrative	-
Total		396.3



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**MEMORANDUM FOR DISTRIBUTION LIST**

**Subj: DECLASSIFICATION OF LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP) DOCUMENTS**

**Ref: (a) SECNAVINST 5510.36**

**Encl: (1) List of DECLASSIFIED LRAPP Documents**

1. In accordance with reference (a), a declassification review has been conducted on a number of classified LRAPP documents.
2. The LRAPP documents listed in enclosure (1) have been downgraded to UNCLASSIFIED and have been approved for public release. These documents should be remarked as follows:

Classification changed to UNCLASSIFIED by authority of the Chief of Naval Operations (N772) letter N772A/6U875630, 20 January 2006.

DISTRIBUTION STATEMENT A: Approved for Public Release; Distribution is unlimited.

3. Questions may be directed to the undersigned on (703) 696-4619, DSN 426-4619.

BRIAN LINK  
By direction

Subj: DECLASSIFICATION OF LONG RANGE ACOUSTIC PROPAGATION PROJECT  
(LRAPP) DOCUMENTS

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# Declassified LRAPP Documents

Report Number	Personal Author	Title	Publication Source (Originator)	Pub. Date	Current Availability	Class.
DASC 012-C-77	Unavailable	LRAPP PACIFIC DYNAMIC ARCHIVE (U) SEPTEMBER 1976	Daniel Analytical Services Corporation	770201	NS; ND	U
SAI-78-527-WA	Spofford, C. W.	NELANT DATA ASSESSMENT APPENDIX III-MODELING REPORT	Science Applications, Inc.	770225	ADA 0117680	U
PSI TR 036049	Barnes, A. E., et al.	OCEAN ROUTE ENVELOPES	Planning Systems Inc.	770419	ND	U
Unavailable	Unavailable	TAP II BEAMFORMING SYSTEM SOFTWARE FINAL REPORT	Bunker-Ramo Corp. Electronic Systems Division	770501	ADC011789	U
S01037C8	Unavailable	TAP 2 PROCESSING SYSTEM FINAL REPORT HARDWARE DOCUMENTATION (U)	Bunker-Ramo Corp. Electronic Systems Division	770501	ADC011790; NS; ND	U
Unavailable	Weinberg, H.	GENERIC FACT	Naval Underwater Systems Center	770601	ADB019907	U
Unavailable	Unavailable	TASSRAP II OB SYSTEM TEST	Analysis and Technology, Inc.	770614	ADA955352	U
Unavailable	Unavailable	LRAPP TECHNICAL SUPPORT	Texas Instruments, Inc.	770624	ND	U
Unavailable	Bessette, R. J., et al.	TASSRAP INPUT MODULE	Analysis and Technology, Inc.	770729	ADA955340	U
Unavailable	Unavailable	TAP-II PHASE II FINAL REPORT	Bunker-Ramo Corp. Electronic Systems Division	770901	ADC011791	U
Unavailable	Unavailable	LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP)	Xonics, Inc.	770930	ADA076269	U
SAI78696WA	Unavailable	REVIEW OF MODELS OF BEAM-NOISE STATISTICS (U)	Science Applications Inc.	771101	NS; ND	U
TRACORT77RV109 C	Unavailable	FINAL REPORT FOR CONTRACT N00014-76-C-0066 (U)	Tracor Sciences and Systems	771130	ADC012607; NS; ND	U
Unavailable	Unavailable	LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP)	Xonics, Inc.	771231	ADB041703	U
Unavailable	Homer, C. I.	SUS SOURCE LEVEL ERROR ANALYSIS	Underwater Systems, Inc.	780120	ND	U
Unavailable	Fitzgerald, R. M.	LOW-FREQUENCY LIMITATION OF FACT	Naval Research Laboratory	780131	ADA054371	U
Unavailable	Unavailable	MIDWATER ACOUSTIC MEASUREMENT SYSTEM - PAR AND ACODAC	Texas Instruments, Inc.	780228	ADB039924	U
ORI TR 1245	Moses, E. J.	OPTIONS, REQUIREMENTS, AND RECOMMENDATIONS FOR AN LRAPP ACOUSTIC ARRAY PERFORMANCE MODEL	ORI, Inc.	780331	ND	U
Unavailable	Hosmer, R. F., et al.	COMBINED ACOUSTIC PROPAGATION IN EASTPAC REGION (EXERCISE CAPER): INITIAL ACOUSTIC ANALYSIS	Naval Ocean Systems Center	780601	ADB032496	U
LRAPPRC78023	Watrous, B. A.	LRAPP EXERCISE ENVIRONMENTAL DATA INVENTORY, JUNE 1978 (U)	Naval Ocean R&D Activity	780601	NS; ND	U
TR052085	Solomon, L. P., et al.	HISTORICAL TEMPORAL SHIPPING (U) ADA 0371 07	Planning Systems Inc.	780628	NS; ND	U